VIDEOLOGY®
IMAGING SOLUTIONS INC.

Instruction Manual

20Z704T-PZ10
Mini Speed Dome Camera

Prior to Using This Document: *Videology reserves the right to modify the information in this document as necessary and without notice. It is the user's responsibility to be certain they possess the most recent version of this document by going to www.videologyinc.com, searching for the model number, and comparing revision letters on the respective document, located in the document's footer.*

For technical assistance with this product, please contact the supplier from whom the product was purchased.

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1. Document History

Revision	Issue Date	Reason	CN#
Rev A	06-30-09	Initial release	09-0101
Rev B	08-13-09	Section 4, 8.8, 10.5.2 revised	09-0116

2. Important Safety Instructions

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: To reduce the risk of electric shock, do not open covers.
No user serviceable parts inside.
Refer servicing to qualified service personnel.

This symbol is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This exclamation point symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: To prevent the risk of fire or electric shock hazard, do not expose this camera to rain or moisture.

Read Instructions
Read all of the safety and operating instructions before using the product.

Retain Instructions
Save these instructions for future reference.

Attachments / Accessories
Do not use attachments or accessories unless recommended by the manufacturer as they may cause hazards, damage product and void warranty.

Water and Moisture
Do not use this product near water or moisture.

Installation
Do not place or mount this product in or on an unstable or improperly supported location. Improperly installed product may fall, causing serious injury to a child or adult, and damage to the product. Use only with a mounting device recommended by the manufacturer, or sold with the product. To insure proper mounting, follow the manufacturer's instructions and use only mounting accessories recommended by manufacturer.

Power source
This product should be operated only from the type of power source indicated on the marking label.

3. Precautions

Operating

- Before using, make sure power supply and others are properly connected.
- While operating, if any abnormal condition or malfunction is observed, stop using the camera immediately and then contact your local dealer.

Handling

- Do not disassemble or tamper with parts inside the camera.
- Do not drop or subject the camera to shock and vibration as this can damage camera.
- Care must be taken when you clean the clear dome cover. Especially, scratch and dust will ruin your quality of camera.

Installation and Storage

- Do not install the camera in areas of extreme temperature, which exceed the allowable range.
- Avoid installing in humid or dusty places.
- Avoid installing in places where radiation is present.
- Avoid installing in places where there are strong magnetic fields and electric signals.
- Avoid installing in places where the camera would be subject to strong vibrations.
- Never expose the camera to rain and water.

4. Features

Camera Specifications

- CCD Sensor:
  1/4" Interline Transfer CCD
- Zoom Magnification:
  x10 Optical Zoom, x10 Digital Zoom (Max. x 100 Zoom) 10x Zoom Model
  x12 Optical Zoom, x10 Digital Zoom (Max. x120 Zoom) 12x Zoom Model
  Variable focus lens model (3.8mm~9.5mm), size 38x38 Variable Focus Lens Model
- True Day & Night Function with moveable IR cut filter
- Various Focus Mode: Auto-Focus / Manual Focus / Semi-Auto Focus.
  (except the Variable Focus Lens model)
- Independent & Simultaneous Camera Characteristic Setup in Preset operation

Powerful Pan/Tilt Functions

- Max. 360°/sec high speed Pan/Tilt Motion
- Using Vector Drive Technology, Pan/Tilt motions are achieved in the shortest path. As a result, time to target view is reduced dramatically and the video on the monitor is very natural to watch.
- For jog operation using a controller, since ultra slow speed 0.05°/sec can be reached, it is very easy to position a camera to the desired target view. Additionally it is easy to move the camera to a desired position with zoom-proportional pan/tilt movement.

Preset, Pattern, Swing, Group, Privacy Mask and More…

- Max. 127 Presets are assignable and characteristics of each preset can be set up independently, such as White Balance, Auto Exposure, Label and so on.
- Max. 8 set of Swing actions can be stored. This enables camera to move repetitively between two preset positions with a designated speed.
- Max. 4 Patterns can be recorded and played back. This enables you to move the camera from any PTZ trajectory recorded by the joystick movement as closely as possible.
- Max. 8 set of Group actions can be stored. This enables you to move the camera repetitively from a combination of Presets or Patterns or Swings. A Group is composed of max. 20 entities of Preset/Pattern/Swings.
- Privacy Masks are assignable, so as not to intrude on other's privacy. (4 Privacy Zones)

PTZ (Pan/Tilt/Zoom) Control

- With RS-485 communication, a max. of 255 cameras can be controlled. Pelco-D or Pelco-P protocol can be selected as a control protocol in the current version of firmware.

OSD (On Screen Display) Menu

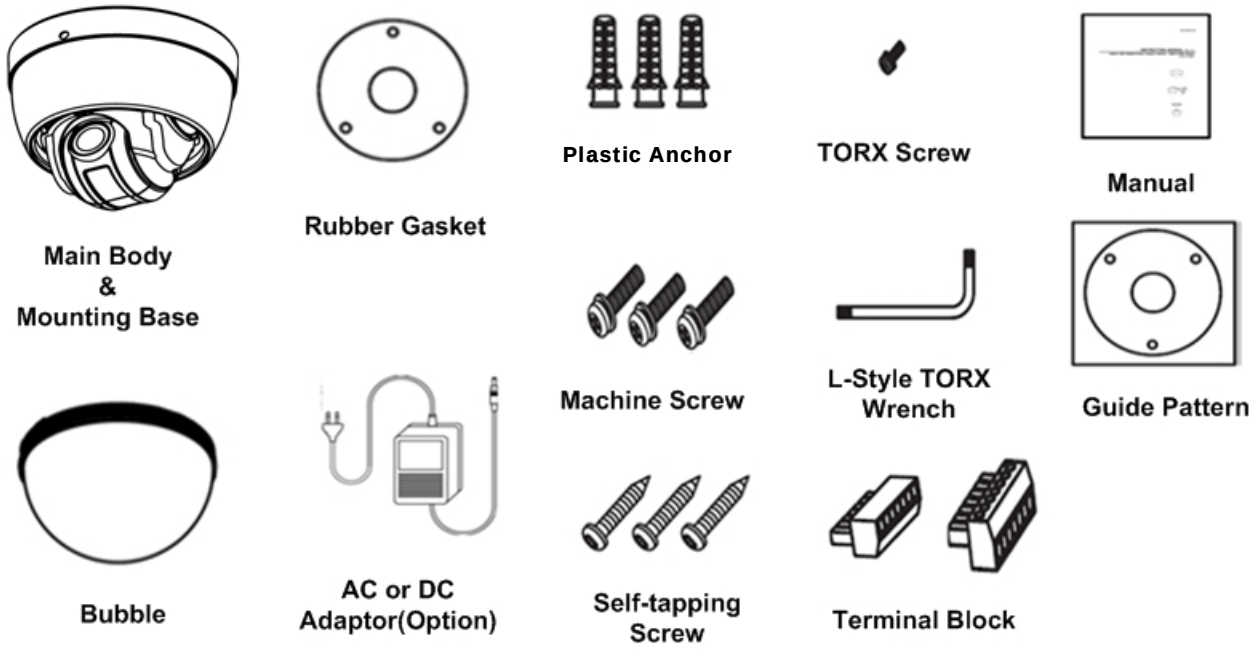
- OSD menu is provided to display the status of a camera and to configure the functions interactively.
- The information such as Camera ID, Pan/Tilt Angle, Alarm Input and Preset can be displayed on screen.

Alarm I/O Functions

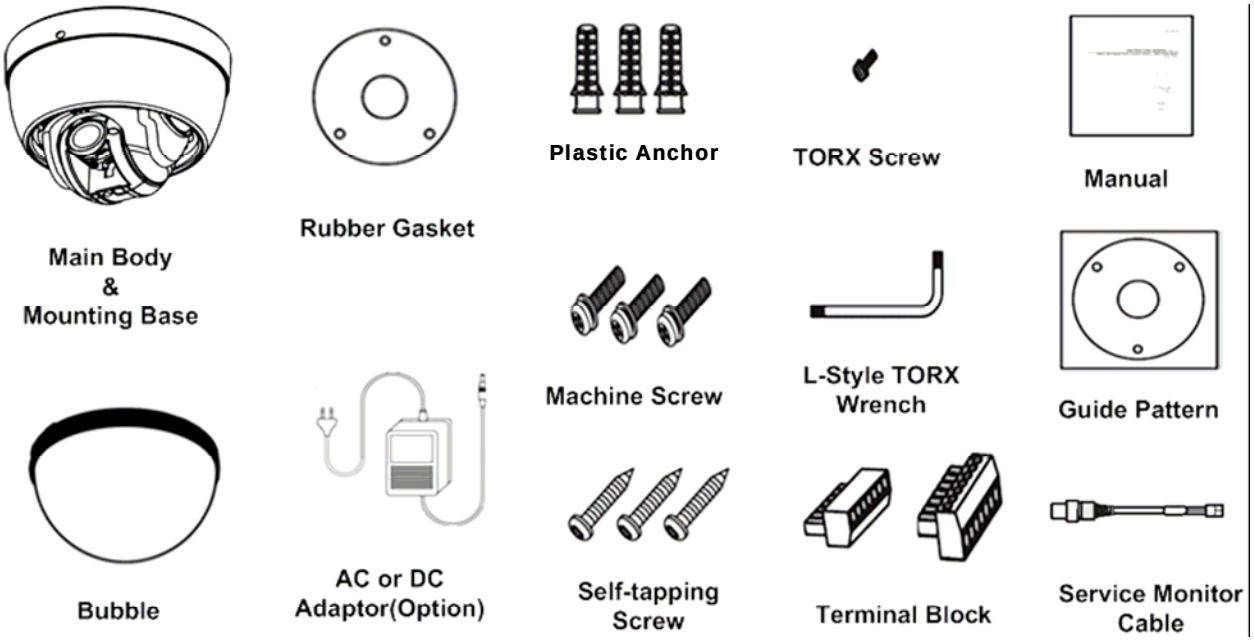
- 4 alarm sensor inputs are available.
- To prevent external electric noise and shock completely, the alarm sensor inputs are decoupled with a photo isolator.
- The signal range of sensor input is from DC 5.0 to 12.0 volts to adopt to various applications.

5. Product & Accessories

5.1. (10x/12x Zoom Models)



5.2. Product & Accessories (Variable Focus Lens Model)

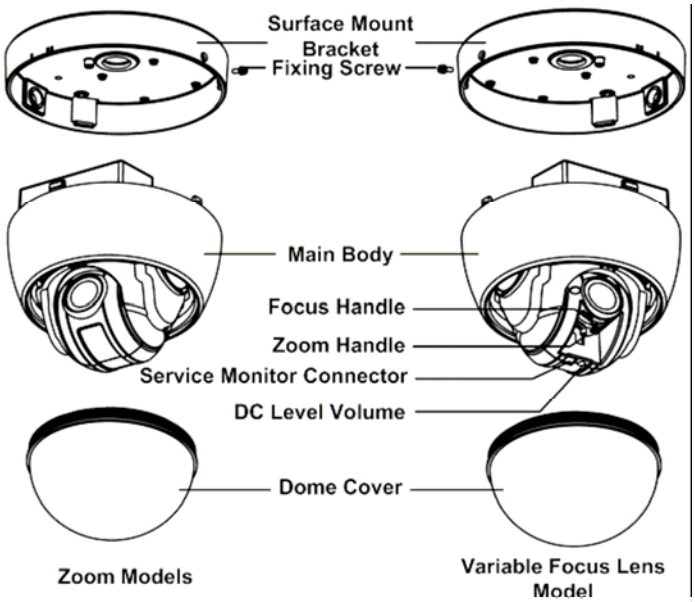


5.3. Options

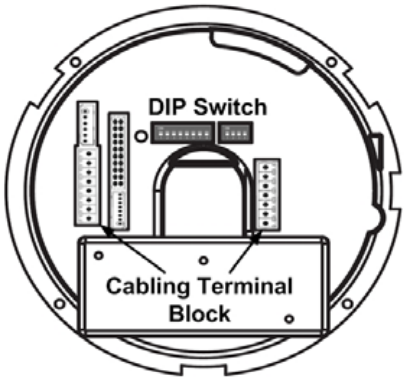
Ceiling Mount Bracket

Wall Mount Bracket

6. Parts Name & Functions



Main Unit / Surface Mount Bracket



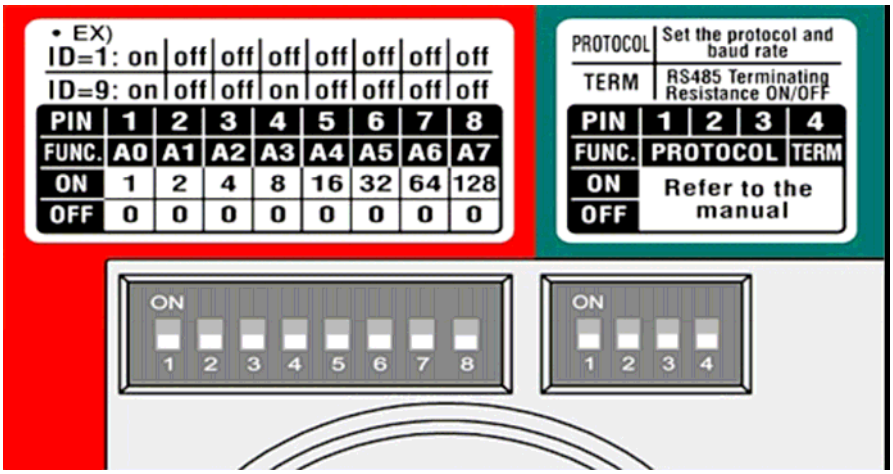
Back of Main Unit

Dome Cover (Bubble)	Do not remove protection vinyl from the bubble before finishing the installation process, thus protecting the bubble from scratches or dust. Selectable clear or smoke types.
Surface Mount Base	This is used to install the camera directly on the ceiling. After separating this cover, attach this directly to ceiling. Camera must be assembled at the last stage.
Fixing Screw	Fixes main unit to surface mount bracket.
Cabling Terminal Block	During installation, Power, Video, Communication, Alarm Input cables are to be connected on to this cabling terminal block.
DIP Switch	Adjusts camera ID and protocols.
Focus Handle	Adjusting the focus lens (FAR/NEAR)
Zoom Handle	Adjusting the zoom lens (TELE/WIDE)
Service Monitor Connector	User service monitor connector assists setting the camera angle and focus when installing
DC Level Volume	Adjusting the DC iris level

7. Installation

7.1. DIP Switch Setup

Before you install the camera, you should set the DIP switches to configure the camera ID, communication protocol.


• EX)
ID=1: on off off off off off off off
ID=9: on off off on off off off off
PIN 1 2 3 4 5 6 7 8
FUNC. A0 A1 A2 A3 A4 A5 A6 A7
ON 1 2 4 8 16 32 64 128
OFF 0 0 0 0 0 0 0 0
PROTOCOL Set the protocol and baud rate
TERM RS485 Terminating Resistance ON/OFF
PIN 1 2 3 4
FUNC. PROTOCOL TERM
ON
OFF
Refer to the manual
ON
1 2 3 4 5 6 7 8
ON
1 2 3 4

7.1.1. Camera ID Setup

ID number of camera is set using dip switch. The example is shown bellow.

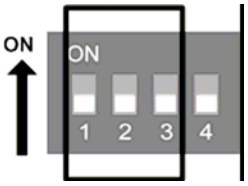
Pin	1	2	3	4	5	6	7	8
ID Value	1	2	4	8	19	32	64	128
ex) ID=5	on	off	on	off	off	off	off	off
ex) ID=10	off	on	off	on	off	off	off	off

The range of ID is 1~255. **Do not use 0 as camera ID**. Factory default of Camera ID is 1.

If you want to control a certain camera, you must match the camera ID with Cam ID setting of DVR or Controller.

7.1.2. Communication Protocol Setup

Select the appropriate Protocol with DIP switch combination.



Switch State			Protocol
P0 (Pin 1)	P2 (Pin 2)	P3 (Pin 3)	
OFF	OFF	OFF	PELCO-D, 2400 bps
ON	OFF	OFF	PELCO-D, 9600 bps
OFF	ON	OFF	PELCO-P, 4800 bps
ON	ON	OFF	PELCO-P, 9600 bps
Others			Reserved

If you want to control using a DVR or P/T controller, their protocol must be identical to the camera. Otherwise, you cannot control the camera.

If you changed camera protocol by changing DIP S/W, the change will be effective after you reboot the camera.

Factory default of protocol is “Pelco-D, 2400 bps”.

7.1.3. Termination Switch Setting

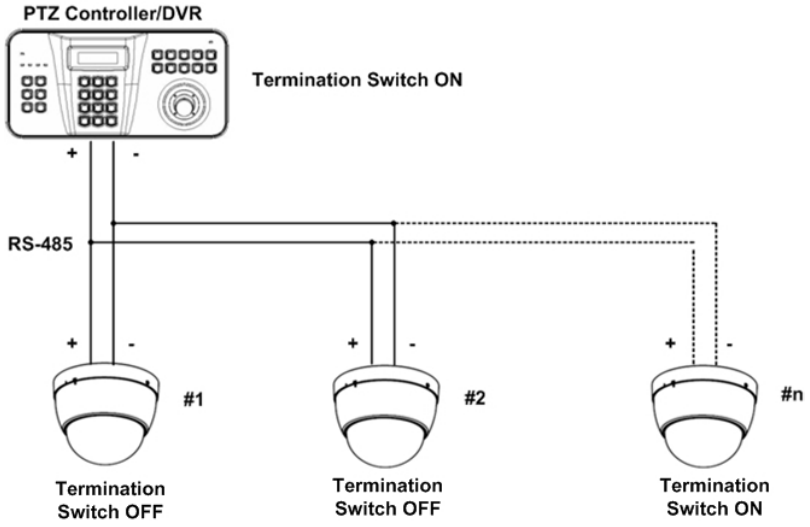
Termination switch (Pin 4) is used in cases listed below.

- Long-distance communication between the controller and the camera (1-to-1 connection)

  When the connecting distance between the two units is especially long, communication errors may occur due to the impedance of transmission cable. In this case, set the termination switch of both units to ON.

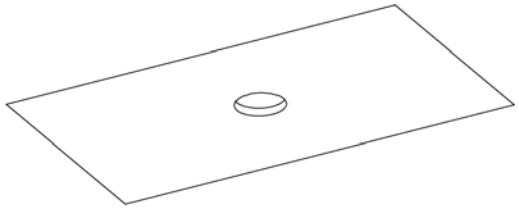
- Controlling multiple cameras (Multiple connection)
  The camera may not operate correctly if multiple cameras are connected and controlled. In this case, set the termination switch of the controller and the last connected camera to ON and the switch of other cameras is OFF.

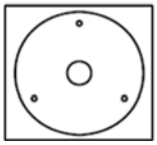
Ex) Using the Terminating Resistance



7.2. Direct Installation on the Ceiling

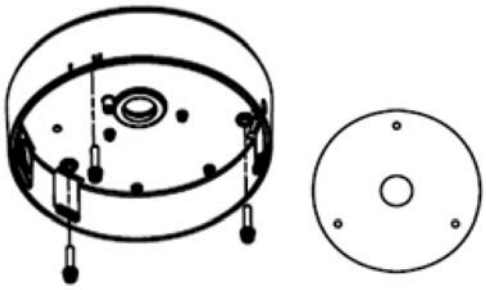
1) To pass cables to upside of ceiling, please, make about 50~60mm hole on the ceiling panel.



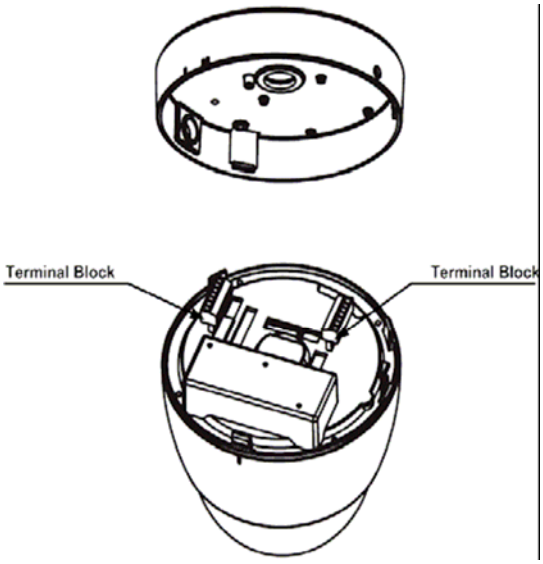


You can use "Guide Pattern" for the making holes.

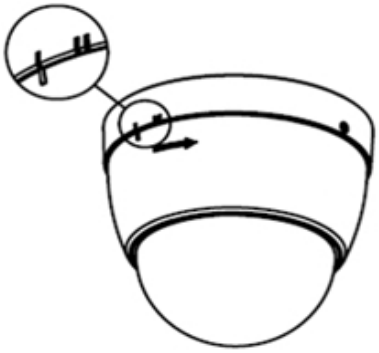
2) Detach the marked part from the rubber gasket and screw the surface mount bracket to the ceiling with fixing screws.



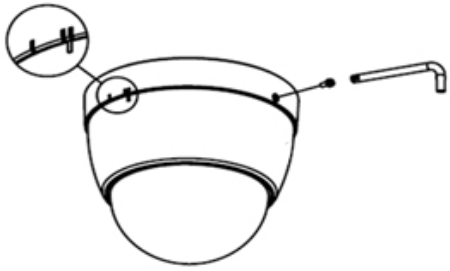
3) Wire cables to terminal block and connect the terminal blocks to main unit.



4) Insert the main body into the surface mount bracket with the molding lines on each part being aligned and turning clockwise.

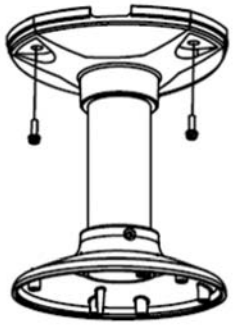


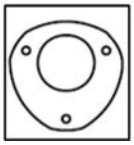
5) Insert the fixing screw tightly and detach the protection vinyl from dome cover.



7.3. Installation using Ceiling Mount Bracket

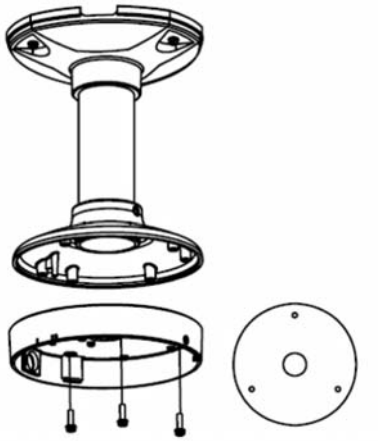
1) Screw ceiling mount bracket to ceiling with screws.



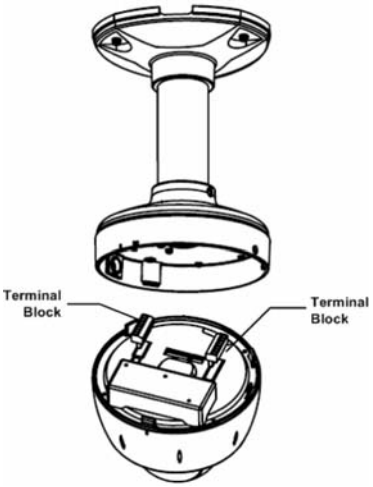


You can use "Guide Pattern" for making holes.

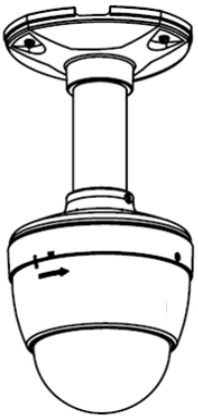
2) Detach the marked part from the rubber gasket and screw the mounting base to the ceiling mount bracket with fixing screws.



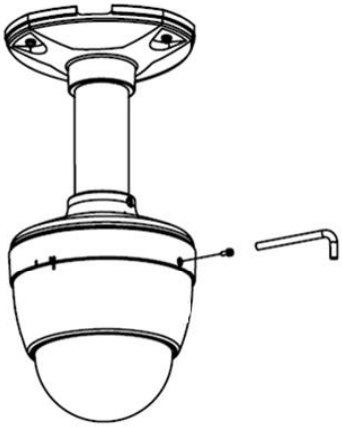
3) Wire cables to terminal block and connect the terminal blocks to main unit.



4) Insert the main body into the ceiling mount bracket with the molding lines on each part being aligned and turning clockwise.

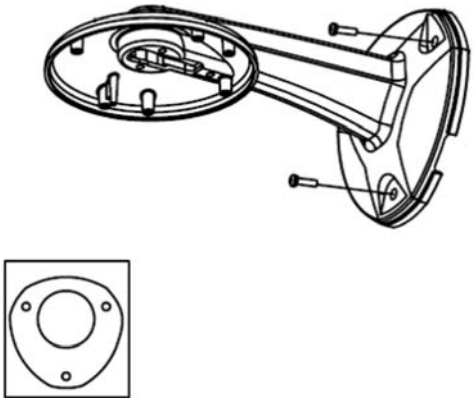


5) Insert the fixing screw tightly and detach the protection vinyl from dome cover.

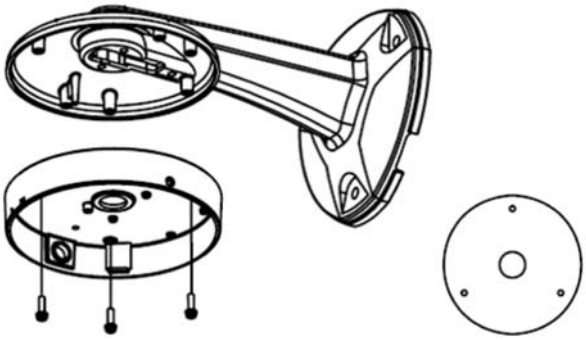


7.4. Installation using Wall Mount Bracket

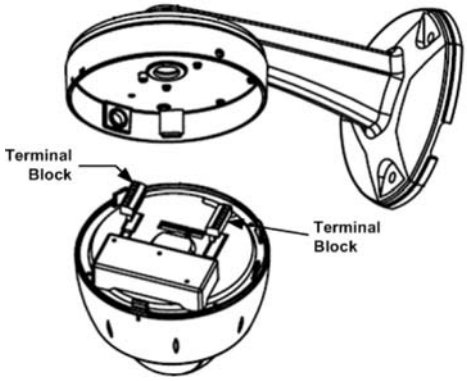
1) Screw wall mount bracket to ceiling with 3 screws.



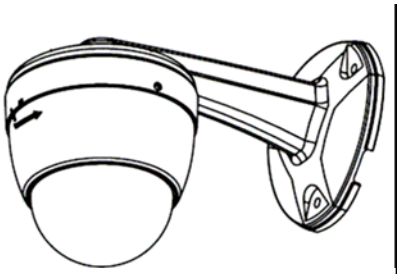
2) Detach the marked part from the rubber gasket and screw the mounting base to the wall mount bracket with fixing screws.



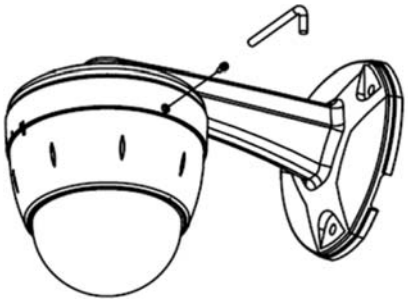
3) Wire cables to terminal block and connect the terminal blocks to main unit.



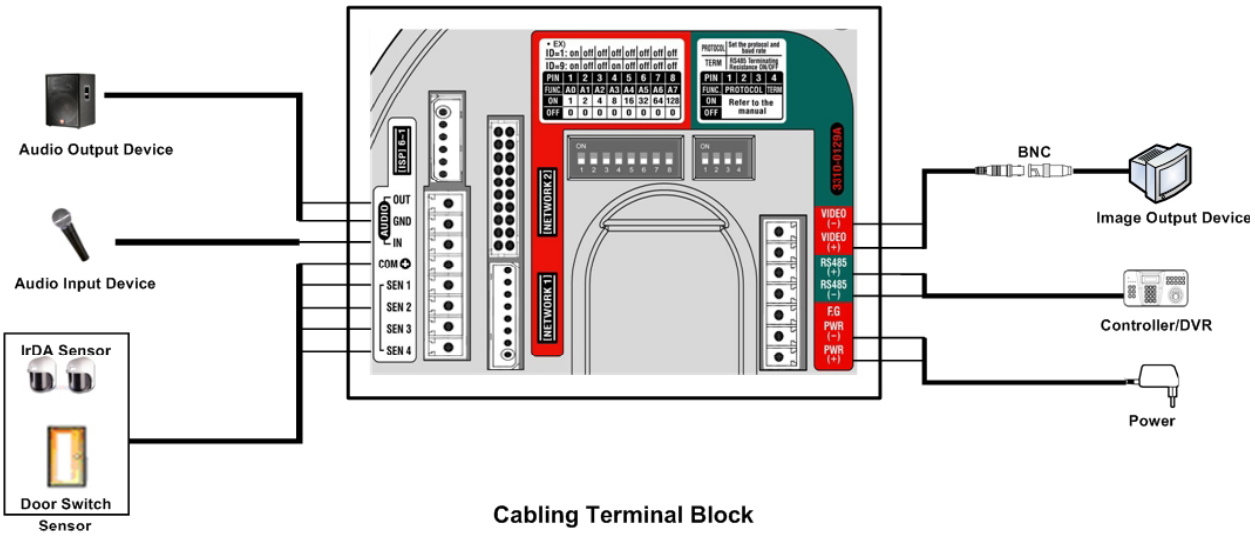
4) Insert the main body into the wall mount bracket with the molding lines on each part being aligned and turning clockwise.



5) Insert the fixing screw tightly and detach the protect the vinyl from dome cover.



7.5. Cabling



Cabling Terminal Block

7.5.1. Power Connection

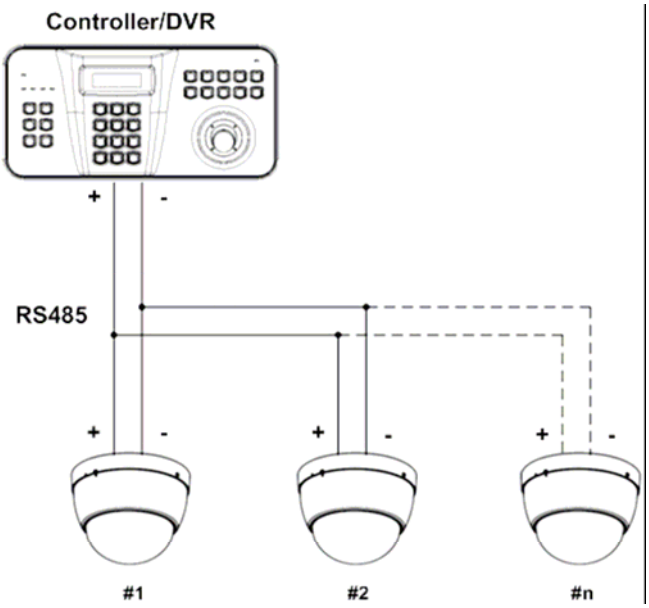
Please, check the voltage and current capacity of rated power carefully. Rated power is indicated in the back of main unit.

Rated Power	Input Voltage Range	Current Consumption
DC 12V	DC 11V ~ 18V	0.8 A
AC 24V	AC 17V ~ 29V	0.4 A

To the case of variable focus lens model is supported only DC12V/1A.

7.5.2. RS-485 Communication

For PTZ control, connect this line to a keyboard, or DVR, or other RS-485 control (i.e. PC). To control multiple cameras, RS-485 communication lines are connected in parallel as shown below.



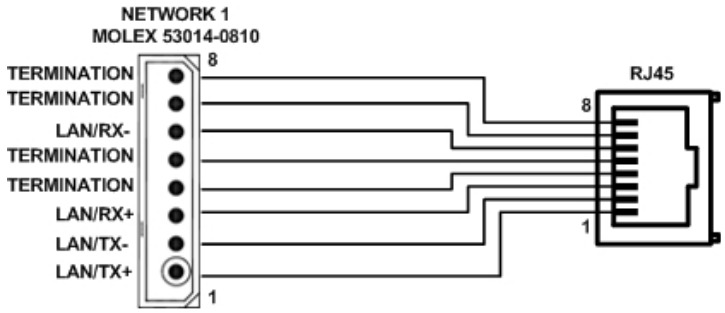
7.5.3. Video Connection

Connect with BNC coaxial cable

7.5.4. Network Connection (Reserved for future network models)

7.5.4.1. NETWORK 1

Connect with LAN cable.
If LAN cable is not connected properly, This product can not be operate.

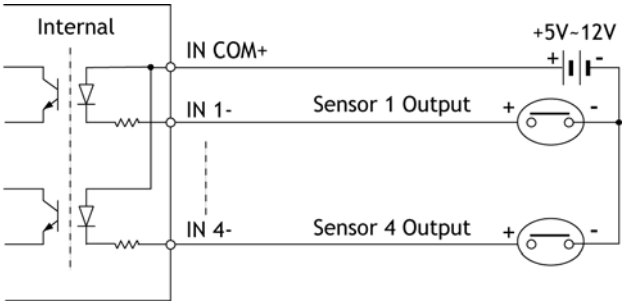


7.5.4.2. NETWORK 2 (Reserved for supplier.)

DO NOT CONNECT WITH ANY DEVICE.

7.5.5. Alarm Input Connection

Sensor Input (open collector example)



Before connecting sensors, check driving voltage and output signal type of the sensor. Since output signals of sensors are either Open Collector or Voltage Output type. In general, the cabling must be done properly depending on which is used.

Signal	Description
IN COM+	Connect (+) cable of electric power source for Sensors to this port as shown in the circuit above.
IN1−, IN2−, IN3−, IN4−	Connect output of sensors for each port as shown in the circuit above.

If you want to use Alarm Input, the types of sensor must be selected in the OSD menu.

The sensor types are Normal Open and Normal Closed. If the sensor type is not selected properly, the alarm can be activated in reverse.

Normal Open	Output Voltage is high state when sensor is activated
Normal Close	Output Voltage is high state when sensor is not activated

8. Check points before operation

Before power is applied, please check the cables carefully.

The camera ID of the controller must be identical to that of the target camera. The camera ID can be checked by reading the DIP switch of the camera, or the boot window on power-up.

If your controller supports multi-protocols, the protocol must be changed to match that of the camera.

If you changed the camera protocol by changing the DIP switch, the change will take effect only after you reboot the camera.

Since the operation method can be different for each controller available, refer to the manual for your controller if camera cannot be controlled properly. The operation of this manual is based on the standard Pelco® Controller.

8.1. Preset and Pattern Function Pre-Check

Check how to operate preset and pattern function with controller or DVR in advance to operate camera function fully when using controller or DVR.

Refer to the following table when using standard Pelco® protocol controller.

< Go Preset >	Input [Preset Number] and press [Preset] button shortly.
< Set Preset >	Input [Preset Number] and press [Preset] button for more than 2 seconds.
< Run Pattern >	Input [Pattern Number] and press [Pattern] button shortly.
< Set Pattern >	Input [Pattern Number] and press [Pattern] button for more than 2 seconds.

If controller or DVR has no pattern button or function, use shortcut keys with preset numbers. For more information, refer to Section 8.3 in this manual.

8.2. Starting OSD Menu

Function Using the OSD menu, Preset, Pattern, Swing, Group and Alarm Input function can be configured for each application.

Enter Menu <Go Preset> [95]

8.3. Reserved Preset

Description Some Preset numbers are reserved to special functions.

Function
<Go Preset> [95] : Enters into OSD menu
<Go Preset> [131~134] Runs Pattern Function 1 ~ 4
<Go Preset> [141~148] Runs Swing Function 1 ~ 8
<Go Preset> [151~158] Runs Group Function 1 ~ 8

8.4. Preset

Function

Max. 127 positions can be stored as Preset position. The Preset number can be assigned from 1 to 128, but 95 is reserved for starting OSD menu.

Camera characteristics (i.e. White Balance, Auto Exposure) can be set up independently for each preset. Label should be blank and "Camera Adjust" should be set to "GLOBAL" as default. All characteristics can be set up in OSD menu.

Set Preset

<Set Preset> [1~128]

Run Preset

<Go Preset> [1~128]

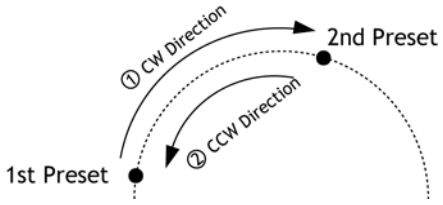
Delete Preset

To delete Preset, use OSD menu.

8.5. Swing

Function

By using Swing function, you can make the camera move between 2 Preset positions repeatedly. When swing function runs, camera moves from the preset assigned as the 1st point to the preset assigned as the 2nd point in CW (Clockwise) direction. Then camera moves from the preset assigned as the 2nd point to the preset assigned as the 1st point in CCW (Counterclockwise) direction.



In case that the preset assigned as the 1st point is same as the preset assigned as the 2nd point, camera turns on its axis by 360° in CW (Clockwise) direction and then it turns on its axis by 360° in CCW (Counterclockwise) direction.

Speed can be set up from 1°/sec to 180°/sec.

Set Swing

To set Swing, use OSD menu.

Run Swing

Method 1) <Run Pattern> [Swing NO.+10]
ex) Run Swing 3: <Run Pattern> [13]

Method 2) <Go Preset> [Swing NO.+140]
ex) Run Swing 3: <Go Preset> [143]

Delete Swing

To delete Swing, use OSD menu.

8.6. Pattern

Function

A Pattern Function memorizes the path of the joystick controller for an assigned time and relays the path exactly as it memorized.

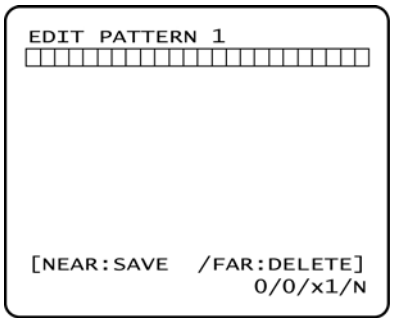
4 Patterns are available and a Maximum of 1200 communication commands can be stored in a pattern.

Set Pattern

Pattern can be created by one of following two methods.

Method 1) <Set Pattern> [Pattern NO.]

Pattern editing screen is displayed as below.



Movement by Joystick and preset movement can be memorized in a pattern.

The total memory size is displayed in a progress bar.

To save the recording press **NEAR**, and to cancel press the **FAR** key.

Method 2) OSD

Using OSD Menu: See the section "How to use OSD Menu".

Run Pattern

Method 1) <Run Pattern> [Pattern NO.]

ex) Run Pattern 2 : <Run Pattern> [2]

Method 2) <Go Preset> [Pattern NO.+130]

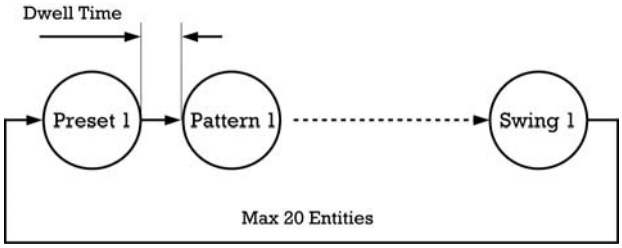
ex) Run Pattern 2: <Go Preset> [132]

Delete Pattern

To delete Pattern, use OSD menu.

8.7. Group

Function — The Group function allows running a sequence of Presets, Pattern and/or Swings. Max 8 group can be stored. Each group can have a max of 20 action entities, which can be preset, pattern or swing. Preset speed can be set up and the repeat number of Pattern & Swing in the Group setup. Dwell time between actions can be set up also.



Set Group — Use OSD Menu to create a Group.

Run Group — Method 1) <Run Pattern> [Group NO.+20]
ex) Run Group 7 : <Run Pattern> [27]

Method 2) <Go Preset> [Group NO.++150]
ex) Run Group 7 : <Go Preset> [157]

Delete Group — To delete Group, use OSD menu.

8.8. Other Functions

Power (Up Action) — This function resumes the last action executed before power down. Most actions, such as Preset, Pattern, Swing and Group, are available for this function, but Jog actions are not available to resume.

Auto Flip

10x Zoom Model	If the tilt angle arrives at the top of tilt orbit (90° straight down), the images are reversed automatically and F appears in screen. If this function is set to OFF, tilt movement range is limited to 0° ~ 95°.

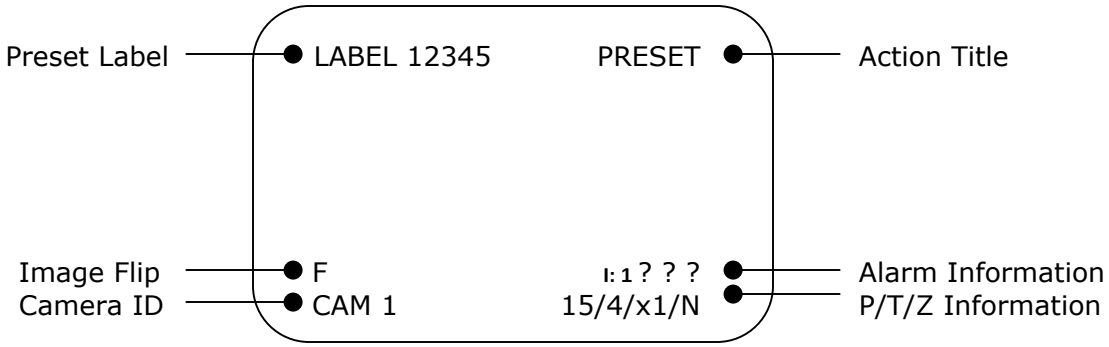
Parking Action — This function enables the ability to locate the camera to a specific position automatically. If the operator doesn't operate the controller for awhile, the Park Time can be defined as an interval from 1 minute to 4 hours.

Alarm Input — 4 Alarm Inputs are used. If an external sensor is activated, the camera can be set to move to a corresponding preset position. It should be noted that the last alarm input is in effect if multiple sensors are activated.

Privacy Zone Mask — To protect privacy, a maximum of 4 Privacy Masks can be created in arbitrary position to hide objects such as windows, shops or a private house. With Spherical Coordinates system, powerful Privacy Zone Mask function is possible.

GLOBAL/LOCAL Image Setup	WB (White Balance) and AE (Auto Exposure) can be set up independently for each preset. There are 2 modes, "Global" mode & "Local" mode. The Global mode means that WB or AE can be set up totally and simultaneously for all presets in "ZOOM CAMERA SETUP" menu. The Local mode means that WB or AE can be set up independently or separately for each preset in each preset setup menu. Each Local WB/AE value should activate correspondingly when camera arrives at each preset location. During jog operation, Global WB/AE values are applied. All Local WB/AE value do not change when Global WB/AE value changes.
Semi Auto Focus	This mode exchanges focus mode automatically between Manual Focus mode and Auto Focus mode by operation. Manual Focus mode activates in preset operation and Auto Focus mode activates during jog operation. With Manual mode at presets, Focus data is memorized in each preset in advance and camera calls focus data in correspondence with presets as soon as camera arrives at a preset, eliminating focus hunt. Focus mode changes to Auto Focus mode automatically when jog operation starts.

9. OSD Display of Main Screen



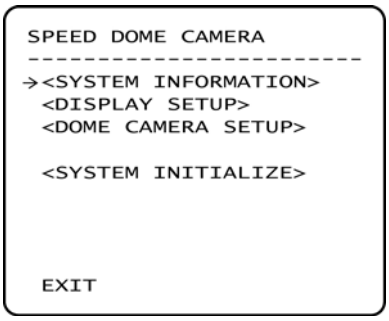
P/T/Z Information	Current Pan/Tilt angle in degree, zoom magnification and a compass direction.	
Camera ID	Current Camera ID (Address).	
Action Title	Followings are possible Action Titles and their meaning.	
	"SET PRESET ×××"	When Preset ××× is stored
	"PRESET ×××"	Current camera Preset
	"PATTERN ×"	When Pattern × is activated
	"SWG×/PRESET ×××"	When Swing × is in activated
	"UNDEFINED"	When any undefined function is called to run
Preset Label	The Label stored for specific Preset.	
Alarm Input	This information shows the current state of Alarm Input. If an Input point is **ON**, it will show a number corresponding to each point. If an Input point is **OFF**, '-' will be displayed.	
	Ex) Point 2 & 3 of inputs are **ON**, OSD will show as below	
	I:-23-	
Image Flip	Shows that images are currently reversed by Auto Flip Function. (Only 10x Zoom model)	

10.Menu

10.1. General Rules of Key Operation for Menu

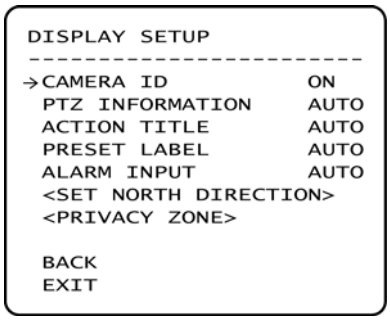
- The menu items surrounded with "< >" always have a sub menu.
- To enter all menu levels, press **NEAR** key.
- To back up one menu level, press **FAR** key.
- To move from item to item in the menu, use the joystick with **Up/Down** or **Left/Right** motion.
- Use **NEAR** key to select an item
- To change a value of an item, use **Up/Down** of the joystick in the controller.
- Press **NEAR** key again to save values or Press **FAR** key to cancel values.

10.2. Main Menu



System Information	Displays system information and configuration.
Display Setup	Enable/Disable of OSD display on Main Screen.
Dome Camera Setup	Configure various functions of this camera.
System Initialize	Initializes system configuration and sets all data to factory default configuration.

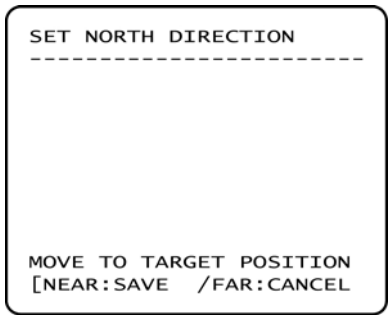
10.3. Display Setup



This menu defines Enable/Disable of OSD display on Main Screen. If an item is set to be AUTO, the item is displayed only when the camera position it is changed.

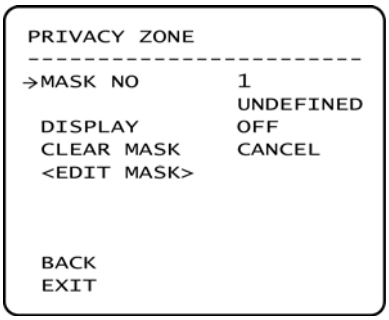
Camera ID	[ON/OFF]
PTZ Information	[ON/OFF/AUTO]
Action Title	[ON/OFF/AUTO]
Preset Label	[ON/OFF/AUTO]
Alarm Input	[ON/OFF/AUTO]

10.3.1. Compass Direction Setup



Set North to assign compass direction as criteria. Move camera and press **NEAR** button to save.

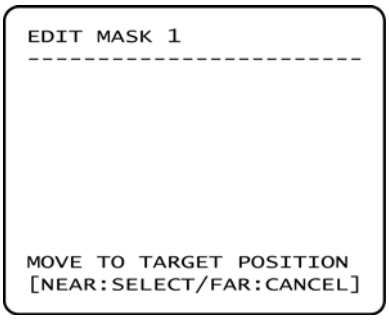
10.4. PRIVACY ZONE MASK Setup



Select area in image to mask.

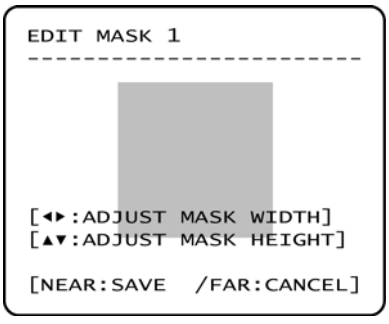
Mask No	[1~4] Select Mask number. If the selected mask contains data, a blank space appears beneath the number selected. Otherwise, "UNDEFINED" will be displayed.
Display	[ON/OFF] Enables or disables selected mask in the image.
Clear Mask	[CANCEL/OK] Deletes data in the selected mask.

10.4.1. Privacy Zone Area Setup



Select **EDIT MASK**, then move camera to desired scene. Then press **NEAR** to adjust mask size.

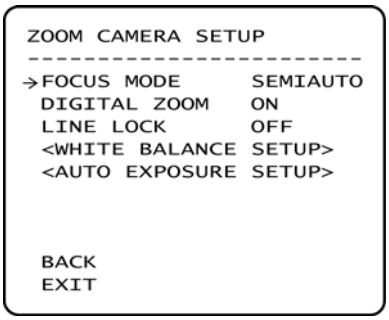
10.4.2. Privacy Zone Size Adjustment



Adjust mask size. Use joystick or arrow buttons to adjust mask size.

◀ ▶ (Left/Right)	Adjusts mask width.
▲ ▼ (Up/Down)	Adjusts mask height.
Press **NEAR** to save, or **FAR** to cancel.	

10.5. CAMERA SETUP



Setup the general functions of zoom camera module.

Focus Mode [AUTO/MANUAL/SEMIAUTO]
Sets camera focus mode.

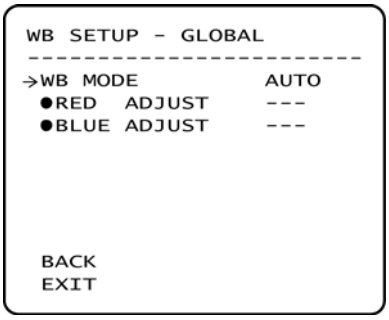
SEMIAUTO Mode
This mode changes focus mode automatically between Manual Focus mode and Auto Focus mode. Manual Focus mode activates on preset operation and Auto Focus mode activates during jog operation.

With Manual mode at presets, Focus data is memorized for each preset in advance. Any additional activity in the scene is ignored so the target stays focused.

Digital Zoom [ON/OFF]
Sets digital zoom function to ON/OFF. If this is set to OFF, optical zoom function runs but zoom function stops at the end of optical zoom magnification.

Line Lock [ON/OFF]
If Line lock sync is ON, video signal is synchronized with AC power. Video will fluctuate after setting is changed, verifying the external sync.

10.5.1. White Balance Setup

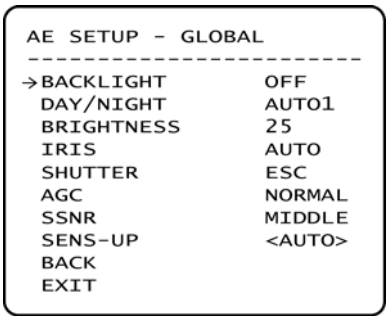


WB Mode [AUTO/MANUAL]
In Manual mode, Red and Blue level can be set up manually

Red Adjust [10~60]

Blue Adjust [10~60]

10.5.2. Auto Exposure Setup



Backlight [ON/OFF]
Enables Backlight Compensation

Day/Night [AUTO1/AUTO2/DAY/NIGHT]
AUTO1 changes Day/Night mode sooner than AUTO2, DAY is full color and NIGHT is full B/W

Brightness [0~100]
Adjusts brightness of the image. Iris, Shutter Speed and Gain are adjusted automatically in correspondence with this value.

IRIS [AUTO/MANUAL (0~100)]
If Iris is set to Auto, Iris should have highest priority in adjusting AE and Shutter Speed should be fixed.

If Iris is set to Manual, Iris should be fixed and Iris has lower priority in adjusting AE, in comparison with others.

Shutter Speed ESC/A.Flicker/Manual
(x2 ~ ×128 frames or 1/60 ~1/120000 sec)

If Iris is set to Manual and Shutter Speed is set to ESC, Shutter Speed should have highest priority. If Shutter Speed is set to A.Flicker, to remove Flicker, Shutter Speed should be set to 1/100 sec. for NTSC and 1/120 for PAL.

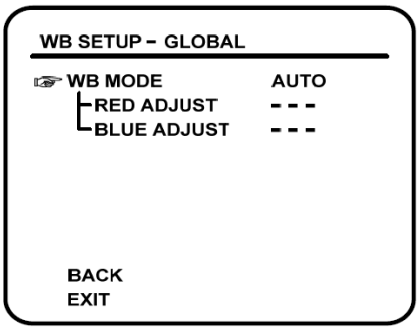
AGC [OFF/NORMAL/HIGH]
Enhances image brightness automatically in case that luminance level of image signal is too low (Day or Night mode only).

SSNR [OFF/LOW/MIDDLE/HIGH]
Enhances images by deducting noises when gain level of images is too high.

SENS-UP [AUTO(2~128)/OFF]
Activates Slow Shutter function when luminance of image (signal) is too dark.

The higher the number, the slower the shutter speed.

10.5.3. White Balance Setup

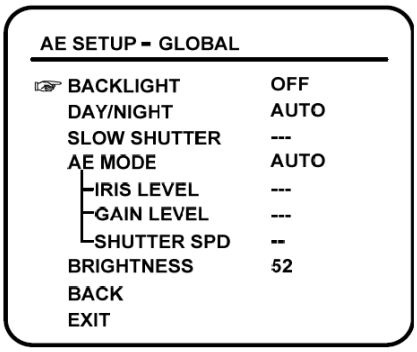


WB MODE [AUTO/MANUAL]
In Manual mode, Red and Blue level can be set up manually

RED ADJUST [10~60]

BLUE ADJUST [10~60]

10.5.4. Auto Exposure Setup



BACKLIGHT [OFF/C1/C2/L1/L2/U1/U2/D1/D2/R1/R2]
Sets Backlight Compensation.
The reference position and the level of BLC are selectable. Refer to the table below. NOTE 1 next page)

DAY/NIGHT [AUTO/DAY/NIGHT]

SLOW SHUTTER [OFF/2~128 FIELDS]
Activates SLOW SHUTTER function when luminance of image (signal) is too dark. Select the number of fields to add together (integrate). It is only available when DAY/NIGHT mode is DAY.

AE MODE [AUTO/SHUTTER/IRIS/AGC/MANUAL]
There are five modes of Auto Exposure function.
With the exception of AUTO mode, all modes can be selected when DAY/NIGHT mode is DAY and SLOW SHUTTER mode is OFF.

IRIS LEVEL [0~255]
It can be set when AE is in IRIS mode or MANUAL mode.

GAIN LEVEL [0~255]
It can be set when AE is in AGC mode or MANUAL mode.

SHUTTER SPD [0~27]
It can be set when AE is in SHUTTER SPEED mode or in MANUAL mode.
As for setting value, refer to the table below. NOTE 2 next page)

BRIGHTNESS [0~96]
It can be set when AE is not in MANUAL mode.

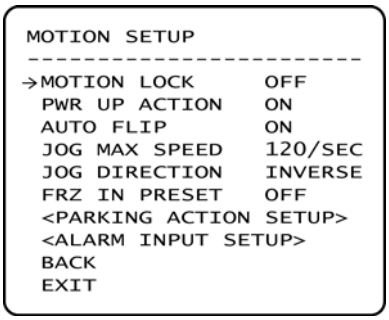
NOTE 1) Backlight Compensation (weight refers to the amount of brightness compensation)

Value	Description	Value	Description
C1	Low weight at the center of the screen	C2	High weight at the center of the screen
L1	Low weight at the left of the screen	L2	High weight at the left of the screen
U1	Low weight at the upper of the screen	U2	High weight at the upper of the screen
D1	Low weight at the lower of the screen	D2	High weight at the lower of the screen
R1	Low weight at the right of the screen	R2	High weight at the right of the screen

NOTE 2) Shutter Speed Table (NTSC)

Value	Description	Value	Description	Value	Description	Value	Description
0	1/60 sec	7	1/400 sec	14	1/1000 sec	21	1/2500 sec
1	1/125 sec	8	1/450 sec	15	1/1100 sec	22	1/2500 sec
2	1/150 sec	9	1/500 sec	16	1/1300 sec	23	1/3000 sec
3	1/200 sec	10	1/600 sec	17	1/1500 sec	24	1/3500 sec
4	1/250 sec	11	1/700 sec	18	1/1600 sec	25	1/4000 sec
5	1/300 sec	12	1/800 sec	19	1/1800 sec	26	1/6000 sec
6	1/350 sec	13	1/900 sec	20	1/2000 sec	27	1/10000 sec

10.6. Motion Setup



Setup the general functions of Pan/Tilt motions.

Motion Lock [ON/OFF]
Holds all motion setup configurations. Note: If Motion Lock is set to ON, it is impossible to set up and delete Preset, Swing, Pattern and Group. It is possible only to run those functions.

To set up and delete those functions, enter the OSD menu.

Power Up Action [ON/OFF]
Refer to "Other Functions" section.

Auto Flip [ON/OFF]
Refer to "Other Functions" section.

Jog Max Speed [1°/sec ~360°/sec]
Sets maximum jog speed.
Jog speed is inversely proportional to zoom magnification. As zoom magnification goes up, pan/tilt speed goes down.

Jog Direction [INVERSE/NORMAL]
Setting this to 'Inverse', the view in the screen is moving the same direction with jog, panning, and in reverse with tilting.

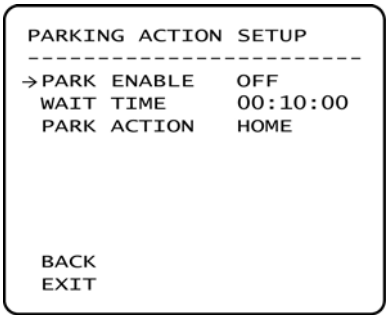
If 'Normal' is selected, the view in the screen is moving in reverse of the above: opposite direction panning, and same direction tilting.

Freeze in Preset [ON/OFF]
Activates a function that holds the image between preset selections, eliminating the moving images.

As soon as camera stops at the selected preset, the camera resumes displaying live images at preset.

This function availability should be different by models.

10.6.1. Parking Action Setup



If Park Enable is set to ON, the camera runs an assigned function automatically if there is no PTZ command during assigned "Wait Time".

Park Enable [ON/OFF]

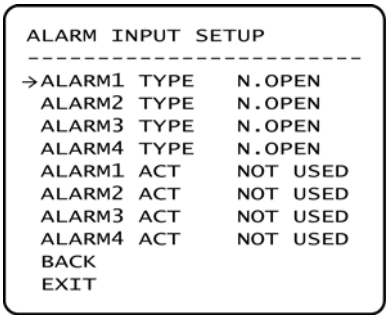
Wait Time [1 minute ~ 4 hour]
The time is displayed with "hh:mm:ss" format and you can change this in 1 min increments.

Park Action [HOME/PRESET/PATTERN/SWING/GROUP]

Camera is activated to selected function. If there is no PTZ command during the assigned "Wait Time".

Note: HOME position is Pan 0, Tilt 0, and Zoom x1 – Position cannot be changed

10.6.2. Alarm Input Setup



Match the Alarm sensor output type and select a preset. If an external sensor is activated, camera will move to this corresponding preset position.

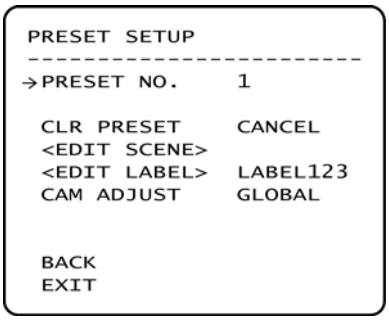
Alarm × Type [Normal OPEN/Normal CLOSE]

Sets sensor input type.

Alarm × Action [NOT USED/PRESET 1~128]

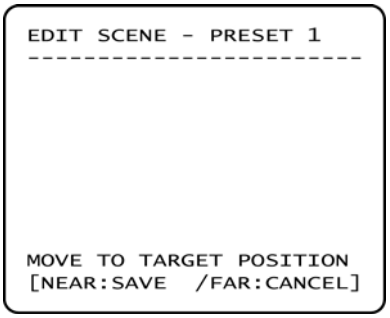
Assign Preset position to each Alarm input.

10.7. PRESET Setup



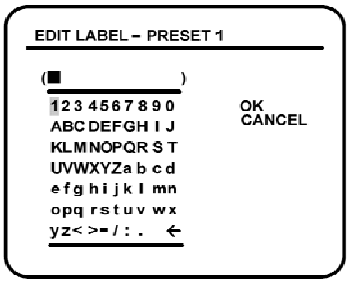
Preset Number	[1~128] If a selected preset is already defined, camera moves to pre-defined position and preset characteristics such as Label and Relay Outputs show on monitor. If a selected preset is not defined, "UNDEFINED" shows on monitor.
Clear Preset	[CANCEL/OK] Delete current Preset data
Edit Preset Scene	Redefine current Preset scene position.
Edit Preset Label	Edits Label to show on monitor when preset runs. MAX. 10 alphabets are allowed.
CAM Adjust	[GLOBAL/LOCAL] WB (White Balance) and AE(Auto Exposure) can be set up independently for each preset. There are 2 modes, "Global" mode & "Local" mode. The Global mode means that WB or AE can be set up totally and simultaneously for all presets in "ZOOM CAMERA SETUP" menu and the Local mode means that WB or AE can be set up independently for each preset in each preset setup menu. Each Local WB/AE value should activate correspondingly when camera arrives at each preset location. During jog operation, Global WB/AE value will be reactivated. All Local WB/AE values should not change although Global WB/AE value changes. If "Local" is selected, the Menu to set WB/AE shows on the monitor.

10.7.1. Edit Preset Scene



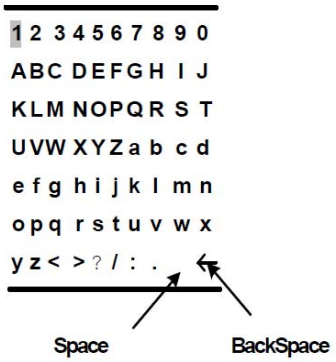
1. Using the Joystick, move the camera to a desired position.
2. By pressing **NEAR** key, save current PTZ data.
3. Press **FAR** key to cancel.

10.7.2. Edit Preset Label



1. Edits the label to show on the monitor when the camera arrives at presets. In Edit Label menu, a vertical rectangular is the cursor. As letters are entered, the cursor moves to the next space.

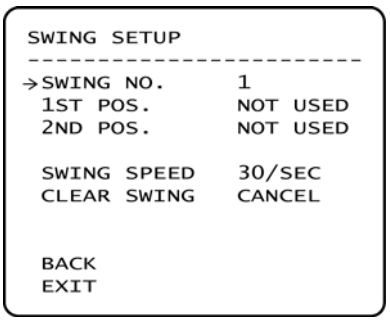
2. Using **Left / Right / Up / Down** of joystick, move to an appropriate character from the Character set. To choose that character, press the **NEAR** key.



If you want to use blank, choose Space character (" "). If you want to delete a character before, use back space character ("← ").

3. If you have finished the Label editing, move cursor to "OK" and press **NEAR** key to save completed label. To abort current entries, move cursor to "Cancel" and press **NEAR** key.

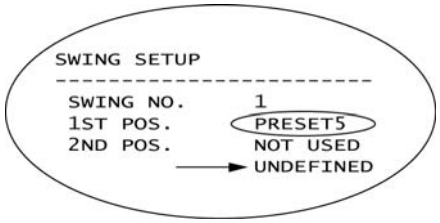
10.8. Swing Setup



Swing Number [1~8]
Selects Swing number to edit. If a selected Swing is not defined, "NOT USED" is displayed in 1st Position and 2nd Position

1st Position [PRESET 1~128]

2nd Position Set up the 2 position for Swing function. If a selected preset is not defined, "UNDEFINED" will be displayed as shown below.



When swing function runs, camera moves from the preset assigned as the 1st point to the preset assigned as the 2nd point in CW (Clockwise) direction.

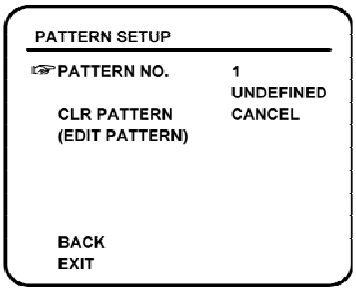
Then camera moves from the preset assigned as the 2nd point to the preset assigned as the 1st point in CCW (Counterclockwise) direction.

In case that the preset assigned in the 1st point is same as the preset assigned as the 2nd point, camera turns on its axis by 360° in CW direction and then it turns on its axis by 360° in CCW direction.

Swing Speed [1°/sec ~180°/sec]
Sets Swing speed from 1°/sec to 180°/sec.

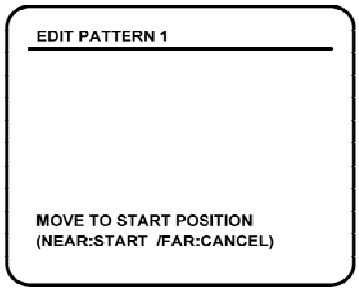
Clear Swing [CANCEL/OK]
Deletes current Swing data.

10.9. Pattern Setup

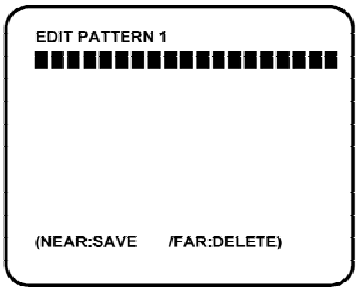


Pattern Number	[1~4] Selects Pattern number to edit. If a selected pattern number is not defined, "UNDEFINED" will be displayed under selected pattern number.
Clear Pattern	[CANCEL/OK] Deletes data in current pattern
Edit Pattern	Opens editing pattern menu.

10.9.1. Edit Pattern

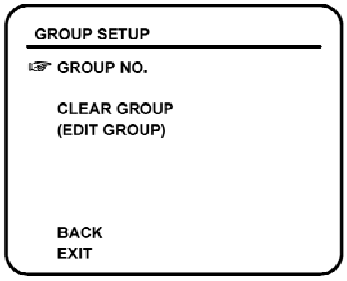


1. By using Joystick, move to start position with appropriate zoom. To start pattern recording, press NEAR key. To exit this menu, press FAR key.



2. Move and/or zoom the camera with joystick of controller or run preset function to memorize the path for the selected pattern. The total memory size is displayed in the display bar. Maximum 1200 communication commands can be stored in a pattern.
3. To save data and exit, press **NEAR** key. To cancel recording and delete the recorded data, press **FAR** key.

10.10. Group Setup



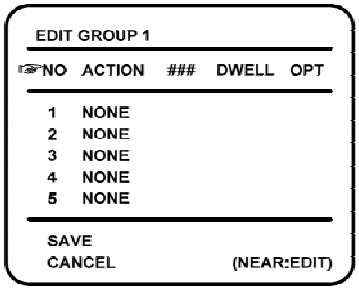
Group Number [1~8]
Selects Group number to edit.

If a selected Group number is not defined, "UNDEFINED" will be displayed under selected Group number.

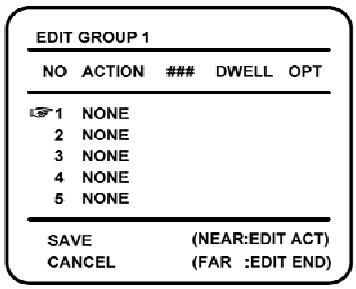
Clear Group [CANCEL/OK]
Deletes data in current Group

Edit Group Opens edit Group menu.

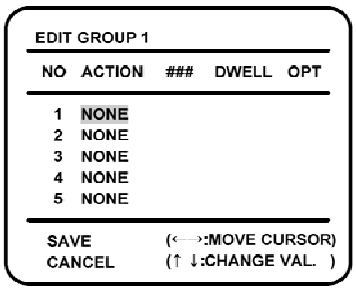
10.11.Edit Group



1. Press **Near** key in "NO" list to start Group setup.



2. Note that MAX. 20 Functions are allowed in a Group. Move cursor up/down and press the **Near** key to select group number set up.



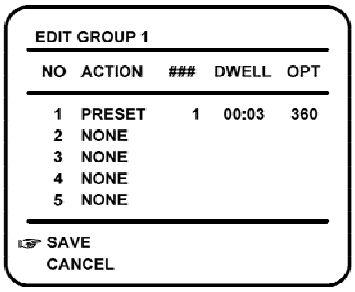
3. Set up Action, Dwell time and Option. Move cursor **Left / Right** to select items and move cursor **Up / Down** to change each value.

   Action [NONE/PRESET/SWING/PATTERN]

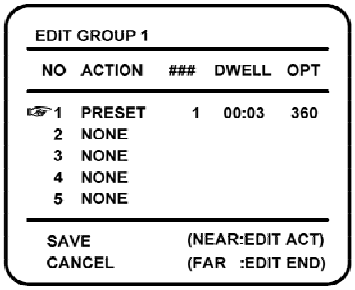
   (###) Select function # (i.e. Preset 1 ~ 128)

   DWELL [0 second ~ 4 minutes]
   Sets Dwell Time between functions

   OPT Option. Set preset speed when preset is set in Action. Set the number of repeats when Pattern or Swing is selected in Action

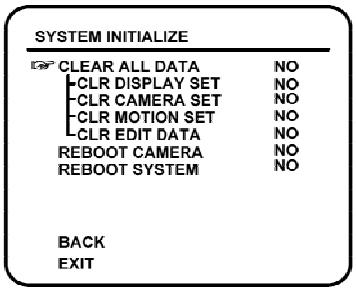


4. After finishing setting up an Action, press the **Near** key to one-upper level menu (Step 2). Move cursor **Up/Down** to select Action number and repeat Step 2 ~ Step 3 to edit other selected Groups.



5. After finishing set up on all Actions, press **FAR** key to exit. Then cursor will move to "SAVE". Press **Near** key to save data.

10.12.System Initialize (10x Zoom Model)

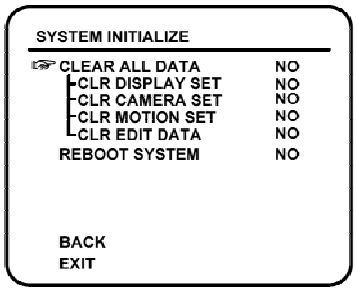


Clear All Data	Deletes all configuration data such as display, camera, motion setup and so on.
Clear Display Set	Initializes Display Configuration
Clear Camera Set	Initializes Camera Configuration
Clear Motion Set	Initializes Motion Configuration
Clear Edit Data	Deletes Preset Data, Swing Data, Pattern Data and Group Data
Reboot Camera	Reboots Zoom Camera module only
Reboot System	Reboots Speed Dome Camera System

10.12.1. Initial Configuration Table

Display Configuration		**Camera Configuration**	
Camera ID	ON	Focus Mode	SemiAuto
PTZ Information	AUTO	Digital Zoom	ON
Action Title	AUTO	Line Lock	OFF
Preset Label	AUTO	White Balance	AUTO
Alarm Input	AUTO	Image Flip	OFF
North Direction	Pan 0°	Backlight	OFF
Privacy Zone	Undefined	Day&Night	AUTO1
		Brightness	25
		Iris	AUTO
Motion Configuration		Shutter	ESC
Motion Lock	OFF	AGC	NORMAL
Power Up Action	ON	SSNR	MIDDLE
Auto Flip	ON	SENS-UP	AUTO (4 Frame)
Jog Max Speed	120° /sec	**User Edit Data**	
Jog Direction	INVERSE	Preset 1~128	Undefined
Freeze In Preset	OFF	Swing 1~8	Undefined
Park Action	OFF	Pattern 1~4	Undefined
Alarm Action	OFF	Group 1~8	Undefined

10.13.System Initialize (Variable Focus Lens Model)



CLEAR ALL DATA	Deletes all configuration data such as display, camera, motion setup and so on.
CLEAR DISPLAY SET	Initializes Display Configuration
CLEAR CAMERA SET	Initializes Camera Configuration
CLEAR MOTION SET	Initializes Motion Configuration
CLEAR EDIT DATA	Deletes Preset Data, Swing Data, Pattern Data and Group Data
REBOOT SYSTEM	Reboots Speed Dome Camera

10.13.1. Initial Configuration Table (Variable Focus Lens Model)

Display Configuration		**Camera Configuration**	
CAMERA ID	ON	DIGITAL ZOOM	ON
PTZ INFORMATION	AUTO	LINE LOCK	OFF
ACTION TITLE	AUTO	BACKLIGHT	OFF
PRESET LABEL	AUTO	DAY/NIGHT	ON
ALARM INPUT	AUTO	AGC MODE	AUTO
NORTH DIRECTION	Pan 0°	FLICKERLESS	OFF
PRIVACY ZONE	UNDEFINED	SENS UP	AUTO
Motion Configuration		**User Edit Data**	
MOTION LOCK	OFF	PRESET 1~128	UNDEFINED
PWR UP ACTION	ON	SWING 1~8	UNDEFINED
AUTO FLIP	ON	PATTERN 1~4	UNDEFINED
JOG MAX SPEED	120° /sec	GROUP 1~8	UNDEFINED
JOG DIRECTION	INVERSE		
PARK ACTION	OFF		
ALARM ACTION	OFF		

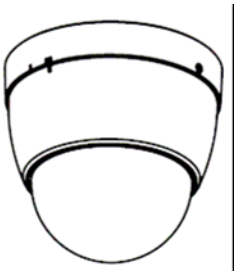
11. Specifications

Electrical	**20Z704T-PZ10 (NTSC)**	**21Z704T-PZ10 (PAL)**
Image Sensor	1/4" Interline transfer CCD	
Active Pixels (HxV)	768 x 494 (380K)	752 x 582 (440K)
Total Pixels (HxV)	811 x 508 (410K)	795 x 596 (470K)
Scanning System	2:1 Interlace	
Scanning Frequency (HxV)	15.734kHz x 59.94Hz	15.652kHz x 50Hz
Resolution	500 TV Line (Color), 570 TV Line (B/W)	
Sensitivity	Color: 0.7 Lux @ F1.8, 0.005 Lux (Sens-up) B/W: 0.02 Lux @ F1.8	
Signal To Noise Ratio	50dB (AGC off, weight on)	
Synchronization	Internal/line-lock	
White Balance	Auto/manual (red, blue gain adjustable)	
Day/Night	Electronic sensitivity-up (DSS), ICR (AGC type)	
Shutter Speed	Electronic	
	1/60 - 1/120,000 sec	1/50 - 1/120,000 sec
Video Output	1.0Vp-p (75 Ohms, composite)	
Power Supply	24VAC	
Power Consumption	Max. 3.5W	
OSD Menu	On/Off	
Environmental		
Operation Temp	-30° C ~ 50° C (-22° F ~ 122° F)	
Storage Temp	-20° C ~ 55° C (-04° F ~ 131° F)	
Note: Isolation and lightning suppression protection is recommended for communication, video and power lines		
Mechanical		
Dimensions (W x H)	155.6mm x 192.8mm (6” x 7.6”) dome only	
Weight	Approx. 805.5g (without optional accessories)	
Focus	Auto/manual/semi-auto focus	
Pan/Tilt Range	Pan: 360^0 endless rotation; Tilt: 180^0	
Pan/Tilt Speed	Manual: 1^0-360^0/sec	
	Preset: 360^0/sec	
	Swing: 1^0-180^0/sec	
Pan /Tilt Preset	128 positions with labels	
Pattern	4 patterns (about 5min/pattern)	
Pan/Tilt Swing	8 swings (speed selectable: 1^0/sec-180^0/sec)	
Pan/Tilt Group	8 groups (max. 20 entries)	
Privacy Zone	ON/OFF (4 zone settings)	
Lens	3.8mm – 38mm f1.8	

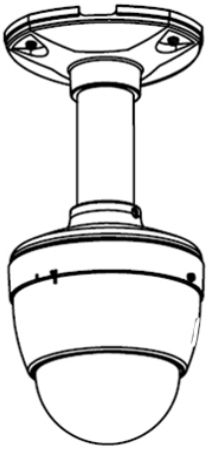
Safety Standards	CE, FCC

Accessories	
Optional	78V0027 Wall mount 78V0027P Pendant mount

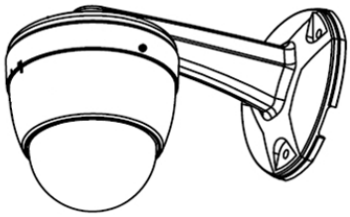
Main Unit



Ceiling Mount

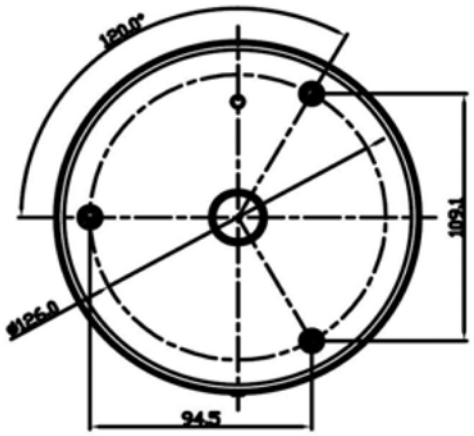


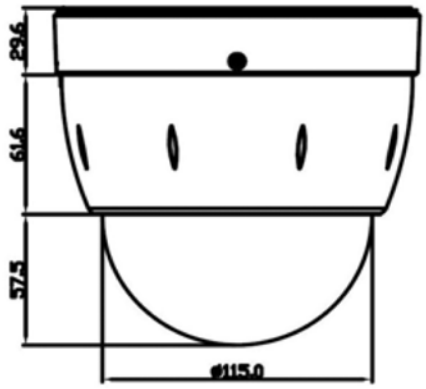
Wall Mount



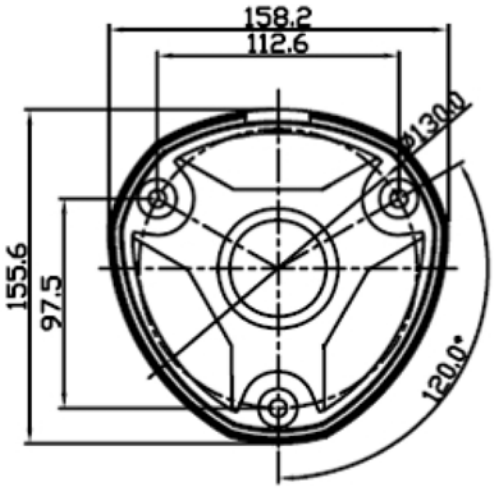
11.1. Dimensions

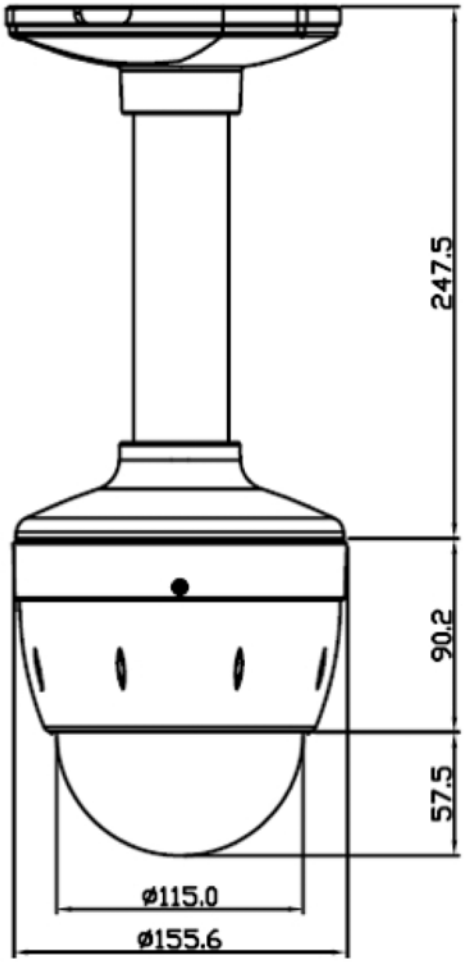
Main Unit & Surface Mount Bracket





Ceiling Mount Bracket





12.Contact Information

For technical assistance with this product, please contact the supplier from whom the product was purchased.

For OEM inquiries, contact Videology Imaging Solutions:

North / South America:	**Europe:**
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Please visit our WEB-site at: http://www.videologyinc.com/

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